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What is claimed is:

1. A trigger valve apparatus for a pneumatic tool driven by compressed air to drive a nail or similar member, said trigger valve apparatus comprising:

5 a plunger shiftable in response to a trigger operation by a user;

a valve piston having a valve piston chamber therein for slidably accommodating said plunger and an axial bore into which said plunger is inserted;

10 an air passage connecting said valve piston chamber to an atmosphere via a clearance between said plunger and said axial bore of said valve piston;

a seal member provided to seal said clearance between said plunger and said axial bore of said valve piston; and

15 a relief passage formed on at least one of said plunger and said axial bore of said valve piston to open said air passage, thereby allowing compressed air to exit from said valve piston chamber to the atmosphere under a condition where said plunger is engaged with said axial bore of said valve piston.

20 2. The trigger valve apparatus for a pneumatic tool defined in claim 1, wherein said seal member is coupled around said plunger and guided along said axial bore of said valve piston.

25 3. The trigger valve apparatus for a pneumatic tool defined in claim 2, where said relief passage is formed at least partly on a surface of said axial bore of said valve piston so as to open said air passage when said plunger is positioned at a predetermined position to discharge compressed air from said valve piston chamber to the atmosphere under a condition where said seal member is brought into contact with said axial bore of said valve piston.

30 4. The trigger valve apparatus for a pneumatic tool defined by claim 2, wherein said relief passage consists of axially extending and alternately arranged guides and grooves formed on said axial bore of said valve piston.

5. The trigger valve apparatus for a pneumatic tool defined by claim 4, wherein said grooves extend in an axial direction of said valve piston and are angularly spaced each other so as to form said guides spaced at substantially equal intervals on the surface of said axial bore of said valve piston.

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6. The trigger valve apparatus for a pneumatic tool defined by claim 4, wherein said guides cooperatively define an effective diameter of said axial bore of said valve piston along which said seal member is guided.

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7. The trigger valve apparatus for a pneumatic tool defined by claim 4, wherein a total cross section of said grooves, formed when said seal member is guided in said axial bore of said valve piston, defines an effective area of said relief passage.

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8. The trigger valve apparatus for a pneumatic tool defined by claim 4, wherein said guides hold said seal member while the compressed air is discharged from said valve piston chamber to the atmosphere via said grooves when said air passage is opened via said relief passage.

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9. The trigger valve apparatus for a pneumatic tool defined in claim 1, wherein said seal member is coupled in an engaging recess of said axial bore of said valve piston.

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10. The trigger valve apparatus for a pneumatic tool defined in claim 9, where said relief passage is formed at least partly on a cylindrical surface of said plunger so as to open said air passage when said plunger is positioned at a predetermined position to discharge compressed air from said valve piston chamber to the atmosphere under a condition where said seal member is brought into contact with said plunger.

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11. The trigger valve apparatus for a pneumatic tool defined by claim 9,

wherein said relief passage consists of axially extending and alternately arranged guides and grooves formed on the cylindrical surface of said plunger.

5 12. The trigger valve apparatus for a pneumatic tool defined by claim 11, wherein said grooves extend in an axial direction of said plunger and are angularly spaced each other so as to form said guides spaced at substantially equal intervals on the cylindrical surface of said plunger.

10 13. The trigger valve apparatus for a pneumatic tool defined by claim 11, wherein said guides cooperatively define an effective diameter of said plunger.

15 14. The trigger valve apparatus for a pneumatic tool defined by claim 11, wherein a total cross section of said grooves, formed when said plunger is guided by said seal member provided on said axial bore of said valve piston, defines an effective area of said relief passage.

20 15. The trigger valve apparatus for a pneumatic tool defined by claim 11, wherein said guides hold said seal member while the compressed air is discharged from said valve piston chamber to the atmosphere via said grooves when said air passage is opened via said relief passage.

16. The trigger valve apparatus for a pneumatic tool defined by claim 1, wherein said seal member is an O-ring.

25 17. A trigger valve apparatus for a pneumatic tool driven by compressed air to drive a nail or similar member, said trigger valve apparatus comprising:
a plunger shiftable in response to a trigger operation by a user;
a valve bush having an axial bore into which said plunger is slidably inserted;
30 a valve piston slidably supported by said valve bush to form a valve piston chamber for accommodating said plunger;

an air passage connecting said valve piston chamber to an accumulator chamber via a clearance between said plunger and said axial bore of said valve bush;

5 a seal member provided to seal said clearance between said plunger and said axial bore of said valve bush; and

10 a relief passage formed on at least one of said plunger and said axial bore of said valve bush to open said air passage, thereby allowing compressed air to enter into said valve piston chamber from said accumulator chamber under a condition where said plunger is engaged with said axial bore of said valve bush.

15 18. The trigger valve apparatus for a pneumatic tool defined in claim 17, wherein said seal member is coupled in an engaging recess of said axial bore of said valve bush.

20 19. The trigger valve apparatus for a pneumatic tool defined in claim 18, where said relief passage is formed at least partly on a cylindrical surface of said plunger so as to open said air passage when said plunger is positioned at a predetermined position to introduce compressed air from said accumulator chamber to said valve piston chamber under a condition where said seal member is brought into contact with said plunger.

25 20. The trigger valve apparatus for a pneumatic tool defined by claim 18, wherein said relief passage consists of axially extending and alternately arranged guides and grooves formed on the cylindrical surface of said plunger.

30 21. The trigger valve apparatus for a pneumatic tool defined by claim 20, wherein said grooves extend in an axial direction of said plunger and are angularly spaced each other so as to form said guides spaced at substantially equal intervals on the cylindrical surface of said plunger.

22. The trigger valve apparatus for a pneumatic tool defined by claim 20, wherein said guides cooperatively define an effective diameter of said plunger.

5 23. The trigger valve apparatus for a pneumatic tool defined by claim 20, wherein a total cross section of said grooves, formed when said plunger is guided by said seal member provided on said axial bore of said valve bush, defines an effective area of said relief passage.

10 24. The trigger valve apparatus for a pneumatic tool defined by claim 20, wherein said guides hold said seal member while the compressed air is introduced via said grooves into said valve piston chamber from said accumulator chamber when said air passage is opened via said relief passage.

15 25. The trigger valve apparatus for a pneumatic tool defined in claim 17, wherein said seal member is coupled around said plunger and guided along said axial bore of said valve bush.

20 26. The trigger valve apparatus for a pneumatic tool defined in claim 25, where said relief passage is formed at least partly on a surface of said axial bore of said valve bush so as to open said air passage when said plunger is positioned at a predetermined position to introduce compressed air from said accumulator chamber to said valve piston chamber under a condition where said seal member is brought into contact with said axial bore of said valve bush.

25 27. The trigger valve apparatus for a pneumatic tool defined by claim 25, wherein said relief passage consists of axially extending and alternately arranged guides and grooves formed on said axial bore of said valve bush.

30 28. The trigger valve apparatus for a pneumatic tool defined by claim 27, wherein said grooves extend in an axial direction of said valve piston and are angularly spaced each other so as to form said guides spaced at substantially

equal intervals on the surface of said axial bore of said valve bush.

29. The trigger valve apparatus for a pneumatic tool defined by claim 27,
wherein said guides cooperatively define an effective diameter of said axial bore
5 of said valve bush along which said seal member is guided.

30. The trigger valve apparatus for a pneumatic tool defined by claim 27,
wherein a total cross section of said grooves, formed when said seal member is
guided in said axial bore of said valve bush, defines an effective area of said
10 relief passage.

31. The trigger valve apparatus for a pneumatic tool defined by claim 27,
wherein said guides hold said seal member while the compressed air is
introduced via said grooves into said valve piston chamber from said
15 accumulator chamber when said air passage is opened via said relief passage.

32. The trigger valve apparatus for a pneumatic tool defined by claim 17,
wherein said seal member is an O-ring.

20 33. A pneumatic tool comprising:
a piston driven by compressed air for causing a reciprocative movement
to strike a nail or similar member;
a cylinder for slidably supporting said piston;
a main valve for supplying and discharging compressed air into and from
25 said cylinder;
a trigger valve for pneumatically controlling said main valve;
a trigger manipulated by a user for actuating said trigger valve; and
at least one exhaust passage for discharging compressed air used for
pneumatically operating said main valve and said trigger valve,
30 wherein an outlet of said exhaust passage is directed to a portion other
than said trigger.

34. The pneumatic tool in accordance with claim 33, wherein said trigger valve comprises:

a plunger shiftable in response to a trigger manipulated by the user;

5 a valve piston supplying and discharging compressed air into and from a main valve chamber in response to a shift movement of said plunger responsive to compressed air in a valve piston chamber formed in said valve piston;

an air passage for discharging the compressed air from said valve piston chamber and said main valve chamber to an atmosphere, with an outlet of said air passage directed to the portion other than said trigger.

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